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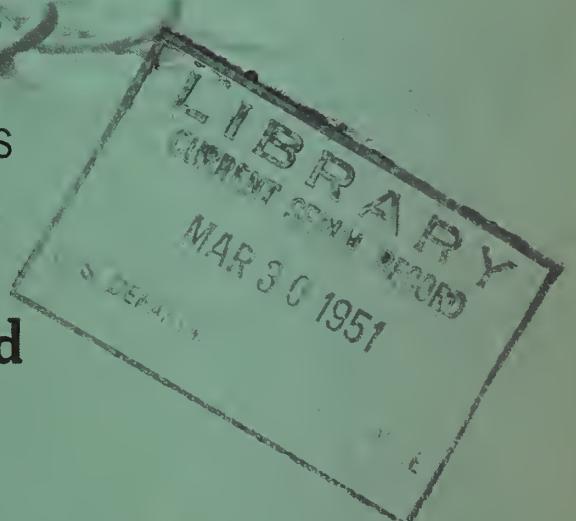


FEDERAL - STATE COOPERATIVE
SNOW SURVEYS AND IRRIGATION WATER FORECASTS
for

**Montana and Northern Wyoming
Upper Missouri, Upper Columbia and
Yellowstone Rivers**

By
Division of Irrigation, Soil Conservation Service
United States Department of Agriculture
and
Montana Agricultural Experiment Station

In cooperation with the U. S. Forest Service, U. S. Geological Survey, National Park Service, U. S. Bureau of Reclamation, State Engineers of Montana and Wyoming and other Federal, State and local organizations.



As of
MAR. 1, 1951



FEDERAL-STATE COOPERATIVE
SNOW SURVEY AND IRRIGATION WATER FORECASTS

FOR
MONTANA and NORTHERN WYOMING

Upper Missouri and Upper Columbia River
Basins

Report Prepared
by

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IRRIGATION WATER SUPPLY

OUTLOOK FOR 1951

As of March 1, 1951

In most of the River Basins of the Upper Missouri and Upper Columbia the outlook for Irrigation Water Supply is good. The Musselshell Basin and parts of the Beaverhead look a little short. There will NOT be as much water as in 1950 or 1949 and possibly less than 1948. The Snow Survey data show there is close to an average Snow Pack based on 18 years of records.

Precipitation in Western Montana has been above average this season to date while Central and Eastern Montana precipitation from valley stations is below average. Precipitation at Valley Stations in Northern Wyoming has been considerably below average while the snow pack is relatively close to Average or above.

Reservoir Storage is generally Good for this time of season and better than last season. Stream-flow has been above the median throughout the entire season to date with some exceptionally high flows in mid-February due to a prolonged 'Chinook'.

The Snow Pack on the Beaverhead River Basin as of March 1 is relatively GOOD. The Red Rock River Basin is a little short while the Horse-Prairie Big Hole and Wise River Basins range from 50% to 25% above the average. The Ruby River Basin is a little short this season with the snow pack about 10% below average for this time of season.

The snow Pack on the Madison and Gallatin River Basins is very close to the average for the first of March based on 18 years of records. On the Main Stem of the Missouri from Three Forks to Fort Benton the Tributaries from the East indicate a below average condition while those from the West indicate an above average condition. The valley Precipitation being a strong minus departure from average over most of the Central part of the State. The Teton, Sun and Marias River Basins have a fair snow pack, Averaging close to 15% and 20% of average.

The Upper Yellowstone River Basin has a Fair Snow Pack for the first of March. The Water Content in this basin is close to Average. Most of the measurements are less than 1950 and 1949 but close to 1948. Tributary Basins to the north are quite low in Water content while those to the South in Yellowstone Park are slightly above normal.

The Lower Yellowstone River Basin Consisting of the Wind, Big Horn Shoshone, Powder and Tongue Rivers Has a GOOD pack of snow for March 1. The Wind and Popo Agie are in excellent condition with water content measurements averaging about 30% above normal. The Big Horn is about Average conditions. The Shoshone is slightly above average. The Tongue and Powder Rivers are a little below average. Precipitation at the valley stations over the Lower Yellowstone Basin is consistantly below normal by inches at many stations. It is hoped spring and summer rains will be above average this coming season.



INDEX TO SNOW SURVEY AND SNOW COURSES

Location												Location											
Drainage Basin and Course Name	Montana Number	Elev.	Sec.	Range	Record	Measuring Dates ^a	Measured By ^b	Drainage Basin and Course Name	Montana Number	Elev.	Sec.	Range	Record	Measuring Dates ^a	Measured By ^b								
JEFFERSON RIVER (ROCK BEAVERHEAD)																							
Lakeview Ridge	11E3	7400	27	1E5	2W	1948	3,4,5		9														
Lakeview Canyon	11E3	6930	26	1E5	2W	1948	3,4,5		9														
Linekin	11E2	6950	15	5S	9W	1948	3,4		1														
White Pine Ridge (nOrth FRAIRIE)	11E1	6550	16	1E5	9W	1948	3,4		1														
Bloody Dick	12D10	7600	12	6S	16W	1948	3,4		1														
Gold Stone	12D9	6100	11	6S	16W	1948	3,4		1														
Lenni Pass	12E1	7450	9	10S	15W	1948	3,4		1														
Terrell Creek	12D12	6550	11	9S	15W	1948	3,4		1														
Trail Creek	12E2	7090	15	10S	15W	1948	3,4		1														
Selway Junction	12D11	6500	27	6S	15W	1948	3,4		1														
(PIG HOLE)																							
Big Hole Pass	12D3	7140	26	3S	18W	1948	3,4		1														
Big Hole Pass (Below) 12D1	6900	24	3S	18W	1948	3,4		1															
East Boundary	12D5	6700	22	3S	17W	1948	3,4		1														
Gibbons Pass	12D2	7100	1	2S	19W	1934	2,3,4,5		1,2														
Jahne Creek	12D3	7310	25	7S	16W	1948	3,4		1														
Miner Forks	12D0	7300	2L	6S	17W	1948	3,4		1														
Miner Lake	12D7	6720	10	6S	16W	1945	3,4,5		1														
(WISE RIVER)																							
Anderson Mdw.	12D14	7000	18	3S	12W	1948	3,4		1														
Flk Horn	12D15	8450	15	4S	12W	1934	3,4,5		2														
Wise River (RUBY RIVER)	12D13	6300	15	2S	12W	1948	3,4		1														
Cottonwood	11E2	5900	24	10S	3W	1948	3,4		1														
Cottonwood (Upper)	11E1	6400	30	10S	2W	1948	3,4		1														
Flashlight	12D3	6950	22	8S	7W	1945	3,4,5		1														
Tobacco Root	12D2	6900	13	1S	3W	1948	3,4		1														
Vigilante	11D1	6125	28	9S	3W	1948	3,4		1														
MADISON RIVER																							
Redden	11E5	6550	22	11S	3E	1934	1,2,3,4,5		2														
West Yellowstone	11E7	6700	34	13S	5E	1934	1,2,3,4,5		2														
Norris Basin	10E2	7500	140°-141°	110°-42°		1935	3,4		5,0														
GALLATIN RIVER																							
Devil's Slide	10D4	8100	14	5S	6E	1935	3,4,5		2,6														
Hood Meadow	10D3	6600	22	1S	6E	1934	3,4,5		2,0														
Mystic Lake	10D2	6600	30	3S	7E	1935	2,3,4		6,7														
New World	10D1	6700	24	3S	6E	1939	2,3,4,5		0,7														
21-Mile	11E6	7150	1	11S	5E	1934	1,2,3,4,5		2														
MISSOURI RIVER MAIN STE																							
Chessman Reservoir	12C5	6200	2	8N	5W	1936	1,2,3,4,5		2														
Crystal Lake	9C1	6100	24	12N	17E	1941	3,4		1														
Grasshopper	10C2	7000	19	9N	8E	1938	3,4		1														
Kings Hill	10C1	7950	35	13N	7E	1937	3,4,5		2														
Picnic Grounds	12C0	6500	22	5N	6W	1940	2,3,4		3														
Pipestone Pass	12D1	7200	11	1N	7W	1938	2,3,4,5		1														
Stampede Pass	12C1	6900	10	13N	7W	1934	3,4,5		2														
Tennile Creek, Lower	12C2	6250	13	8N	6W	1935	1,2,3,4,5		2														
Tennile Creek, Middle	12C3	6800	13	8N	6W	1934	1,2,3,4,5		2														
Tennile Creek, Upper	12C4	8000	19	8N	5W	1935	1,2,3,4,5		2														
TEWON RIVER																							
Fright Creek	12A1	6000	13	20N	10W	1948	3,4		1														
Waldron Creek	12B2	5600	16	25N	9W	1948	3,4		1														
West Fork	12B1	6000	6	25N	9W	1948	3,4		1														
SUN RIVER																							
Bench Mark	12B3	5500	9	20N	10W	1948	3,4		1														
Cabin Creek	12B0	5100	33	23N	10W	1949	3,4		1														
5-Bull	12B9	5600	36	20N	10W	1948	3,4		1														
Gates Park	12B5	5300	31	24N	10W	1949	3,4		1														
Goat Mountain	12B7	7000	20	22N	10W	1934	3,4		2														
My Lake	12B9	7300	21	23N	12W	1950	3,4		1														
Wrong Creek Ridge	12B3	6800	17	25N	10W	1949	3,4		1														
Wrong Creek	12B4	5700	32	25N	10W	1949	3,4		1														
MARIAS RIVER																							
Marias Pass	13A5	5250	34	30N	11W	1936	1,2,3,4,5		2														
Snow Lab. #10	13A9	5200	15	29N	11W	1947	1,2,3,4,5		2														
MILK RIVER																							
Rocky Boy	9A1	5200	15	28N	10E	1941	3,4		7														
MUSSELSHELL RIVER																							
Grasshopper	10C3	7000	19	9N	8E	1938	3,4		1														
UPPER YELLOWSTONE																							
Camp Senia	9D1	7890	2	8S	18E	1937	4		1														
Canyon	10E3	7750	140°-141°	110°-30°		1938	1,2,3,4,5		Pd.Obs.														
Cooke City	10D7	7100	25	9S	11E	1937	1,2,3,4,5		5														
Crevice Mt.	10D5	8100	29	9S	9E	1935	3,4		1														
Independence	10D0	8000	22	7S	12E	1941	3,4		Pd.Obs.														
Lake Camp	10E4	7850	140°-34°	110°-21°		1937	1,2,3,4,5		Pd.Obs.														
Lodgepole (Wyo.)	9E1	8200	32	56N	106W	1940	4,5		1														
Lupine Creek	10E1	7300	140°-54°	110°-37°		1938	1,2,3,4,5		5														
(SIZZLES RIVER)																							
Porcupine	10C3	6500	10	4N	10E	1938	3,4		1														
LOWER YELLOWSTONE (WYO.)																							
Brooks Lake #3	10F2	9200	23	4N	110W	1939	2,3,4,5		Pd.Obs.														
Burroughs Creek	9F6	8800	15	43N	107W	1948	2,3,4,5		Pd.Obs.														
Dinwoodie	9F10	10000	9	38N	105W	1948	2,3,4,5		Pd.Obs.														
Dry Creek	9F9	9500	34	4N	105W</																		

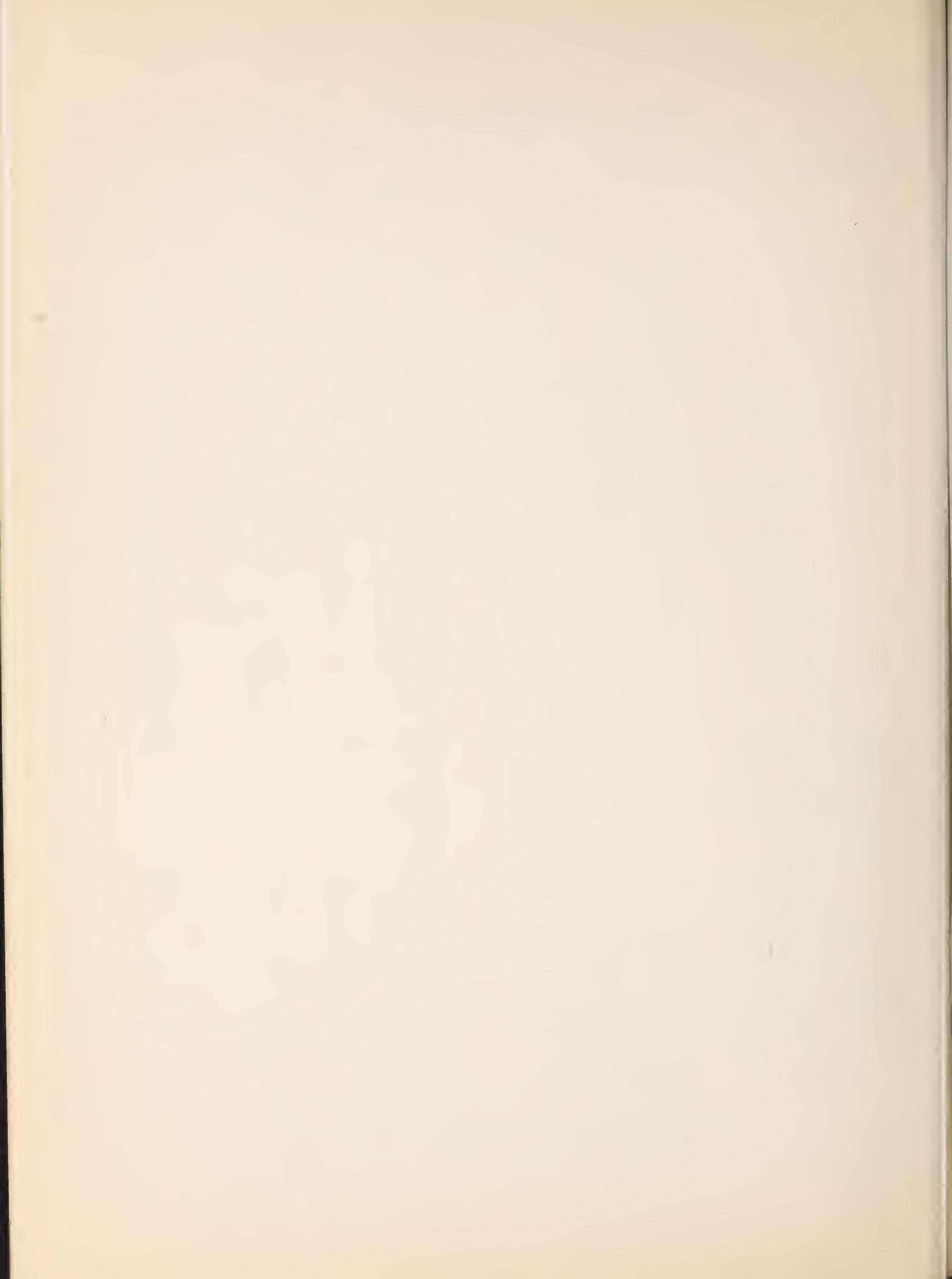
STORAGE IN RESERVOIRS OF MONTANA AND NORTHERN WYOMING
Reservoir Volumes in 1,000's of acre feet

RESERVOIR	Location or on Diversion from	Usable Capacity	Contents	Contents	March 1 10-Year Average
			this Year March 1 1951	Last Year March 1 1950	
Lake Sewall	Missouri	37.8	19.3	32.1	
Hauser Lake	Missouri	52.1	48.7	42.7	46.4
Holter Reservoir	Missouri	81.9	65.1	49.8	55.5
Fort Peck Res.	Missouri	19,000.0	12,430.0	11,490.0	10,457.7
Ruby Reservoir	Ruby	38.5			
Hebgen Reservoir	Madison River	345.0	230.8	206.8	240.8
Madison Reservoir	Madison River	41.0	35.2	38.7	34.4
Smith River Res.	Smith River	10.7			
Gibson Reservoir	N.Fk. Sun River	105.0	81.5	40.6	64.2
Willow Creek	N.Fk. Sun-Willow Cr.	32.3	23.8	3.0	13.0
Pishkun Reservoir	N.Fk. Sun River	32.0	18.9	18.9	17.4
Lower Two Medicine	L.Two Medicine River	14.0			
Four Horns Res.	Badger Creek	20.0			
Birch Creek Res	Birch Creek	30.0	28.1	19.3	21.0
Lake Francis Res.	Birch Creek	112.0	93.5	82.0	75.9
Askley Lake	Judith River	5.8		4.4	4.3
Durand Res.	N.Fk. Musselshell	7.0	5.5		
Dead Man Basin	Musselshell River	52.5			
Martinsdale Res.	So.Fk. Musselshell	23.1	12.4	10.1	9.3
Fresno Res.	Milk River	127.2	65.9	12.1	44.4
Nelson Res.	Milk Reservoir	66.8	15.7	4.8	31.3
Mystic Lake	W.Rosebud Creek	20.8	8.7	8.6	8.4
Cooney Res.	Red Lodge Creek	27.5	8.4	12.4	9.2
Tongue Reservoir	Tongue River	73.9		5.5	8.9
Sherburne Lake Res.	Swiftcurrent Creek	66.1			17.9
Lake Hellen	Missouri River	10.4	8.6	5.8	
YELLOWSTONE RIVER BASIN (Wyoming)					
Buffalo Bill	Shoshone	456.6	295.0	205.9	297.4
Pilot Butte	Wind River	30.1	8.4	5.9	13.8
Bull Lake	Wind River	155.0	89.5	99.4	62.3
COLUMBIA RIVER BASIN (Montana)					
Georgetown Lake	Flint Creek	31.0	23.0	18.5	18.7
E.Fk.Rock Cr.Res.	E.Fk.Rock Creek	16.0			
W.Fk.Bitterroot Res.	E. Fk.Bitterroot	31.7	10.0	0.6	7.6
Como Lake	Rock Creek	34.8			
Flathead Lake (Sommers)	Flathead River	1,791.0	902.7	657.5	342.2
*Little Bitterroot	Little Bitterroot	37.1	34.7	33.3	14.9
*Dry Fork Res.'s	Dry Fork Creek	6.7	4.4	4.0	2.3
**Mission Valley 9 Reservoirs	Mission Valley (Flathead River)	105.0	49.8	44.1	37.0

*Comprised of two reservoirs on Little Bitterroot river

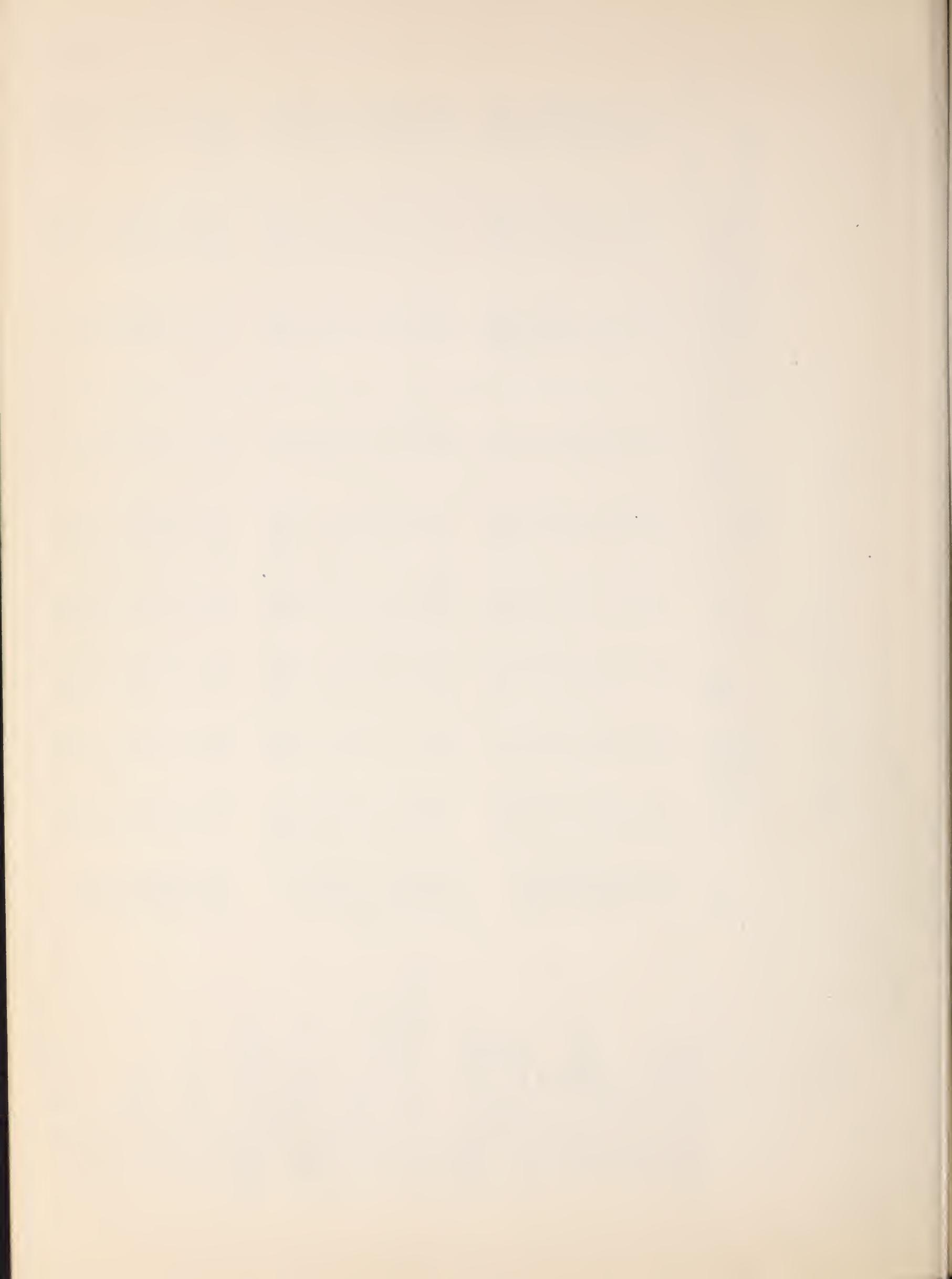
*Comprised of two reservoirs on Dry Fork Creek.

**Comprises nine small reservoirs on Mission Valley Indian Irrigation Service Project.



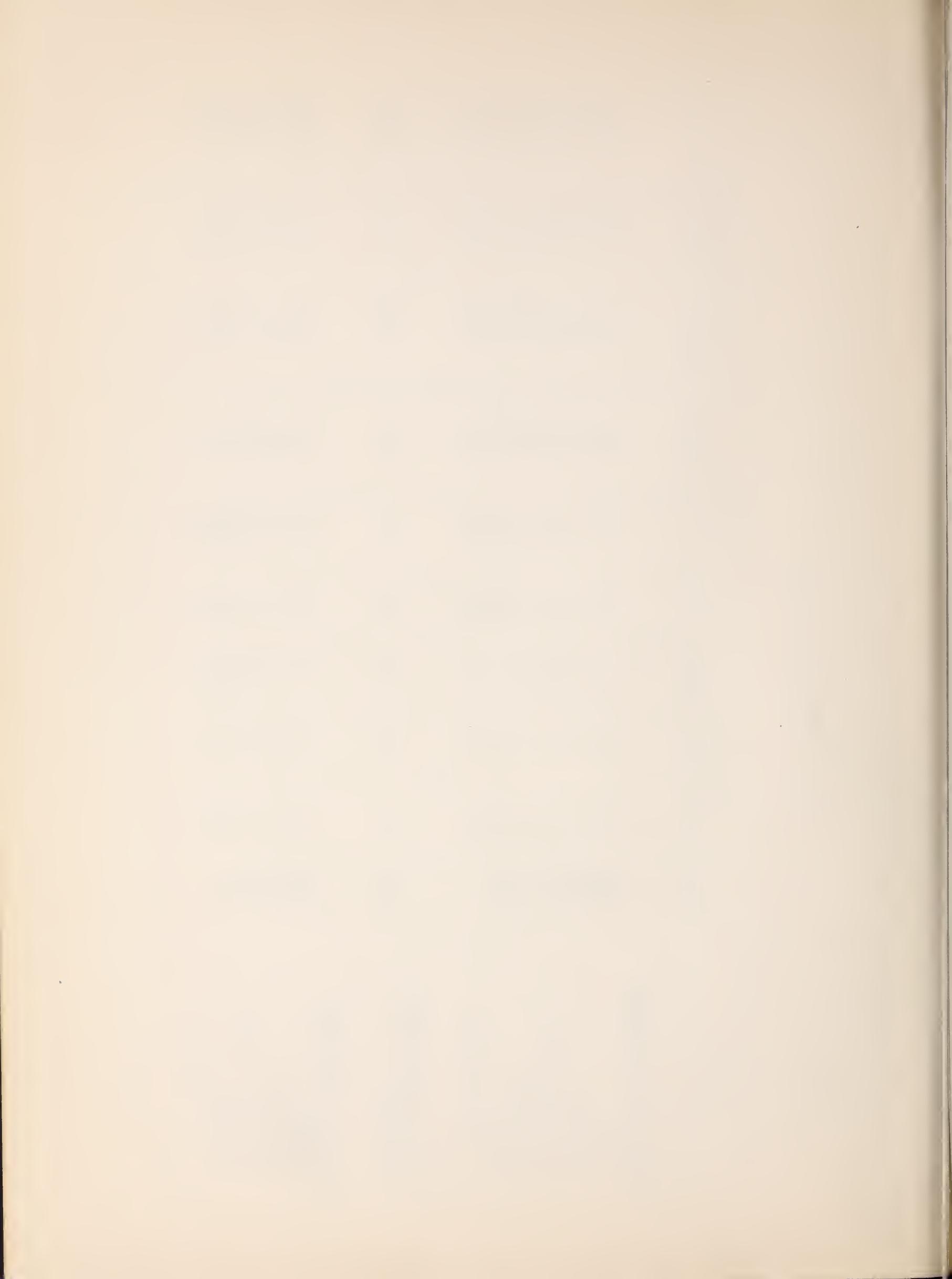
PRECIPITATION DATA FOR MARCH 1, 1951
MONTANA

Station	Elev- ation	1950			1951			Seasonal Accumulation		
		Precipitation		Dept. from Normal	1950-51		Normal	Departure		
		Oct.	Nov.		Jan.	Feb.				
WEST OF DIVIDE										
Butte (Airport)	5533	0.53	1.20	0.59	0.92	0.82	+0.40	4.06	2.49	+8.57
Phillipsburg	5280	0.51	1.25	0.64	1.43	1.45	+0.81	5.28	4.05	+1.23
Hamilton	3529	1.78	1.58	0.71	1.21	1.52	+0.81	6.80	3.97	+2.83
West Glacier	3154	5.87	2.35	5.17	4.77	4.88	+2.75	23.04	13.45	+9.59
Summit (Maries)	5213	7.53	6.13	5.88	5.37	6.52	+3.07	31.43	14.26	+17.17
Ovando 1 SW	4101	1.02	2.38	1.63	1.53	1.72	+0.37	8.28	7.45	+0.83
Trout Creek	2485	6.36	3.95	4.67	5.42	6.51	+3.69	26.91	16.72	+10.19
Thompson Falls	2435	4.36	2.79	2.25	3.14	3.64	+1.06	15.81	9.64	+6.17
Average (8)		<u>3.50</u>	<u>2.70</u>		<u>2.69</u>	<u>2.95</u>		<u>15.20</u>	<u>9.00</u>	<u>+6.20</u>
CENTRAL DIVISION										
Babb	4300	1.04	1.23	0.85	0.65	1.79	+0.97	5.56	4.87	+0.69
Havre	2188	0.24	0.41	0.32	0.39	0.42	-0.08	1.77	3.12	-1.35
Great Falls (Airport)	3664	0.03	1.19	0.58	0.41	1.34	+0.79	3.55	3.37	+0.18
Helene (Airport)	3893	0.43	1.50	0.61	0.38	0.24	-0.13	3.15	2.48	+0.67
Lewistown (Airport)	4132	0.74	0.83	1.05	0.17	0.20	-0.57	2.99	2.27	+0.72
Livingston	4485	0.94	1.05	0.81	0.38	0.40	-0.20	3.58	3.65	-0.07
Wisdom	6058	1.06	1.15	0.48	0.71	0.93	+0.40	4.33	3.75	+0.58
West Yellowstone	6669	2.88	1.79	1.95	2.28	1.91	+0.24	10.81	10.50	+0.30
Mystic Lake	6558	0.86	2.37	1.08	2.02	0.17	-0.81	6.50	6.68	-0.18
Average (9)		<u>0.91</u>	<u>1.28</u>	<u>0.85</u>	<u>0.82</u>	<u>0.82</u>	<u>-0.03</u>	<u>4.69</u>	<u>4.52</u>	<u>+0.17</u>
EASTERN DIVISION										
Malta	2255	0.39	0.18	0.35	0.49	0.52	+0.06	1.93	2.14	-0.51
Ft. Peck	2180	0.24	0.25	0.23	0.48	0.39	+0.12	1.59	2.15	-0.56
Medicine Lake	1962	0.50	0.10	0.21	0.36	0.49	+0.17	1.66	1.99	-0.33
Circle	2428	0.54	0.18	0.13	0.33	0.50	-0.11	1.68	3.45	-1.77
Billings #2	3139	0.83	0.88	0.68	0.70	0.38	-0.12	3.45	3.60	-0.15
Miles City	2392	0.40	0.52	0.31	0.08	0.27	-0.36	1.58	3.25	-1.67
Glendive	2076	0.45	0.16	0.07	0.37	0.42	-0.01	1.47	2.75	-1.28
Broadus	3026	0.46	0.41	0.40	0.48	0.31	-0.17	2.06	2.01	-0.98
Average (8)		<u>0.48</u>	<u>0.34</u>	<u>0.30</u>	<u>0.41</u>	<u>0.41</u>	<u>-0.04</u>	<u>1.93</u>	<u>2.03</u>	<u>-0.90</u>



PRECIPITATION DATA FOR MARCH 1, 1951
NORTHERN WYOMING

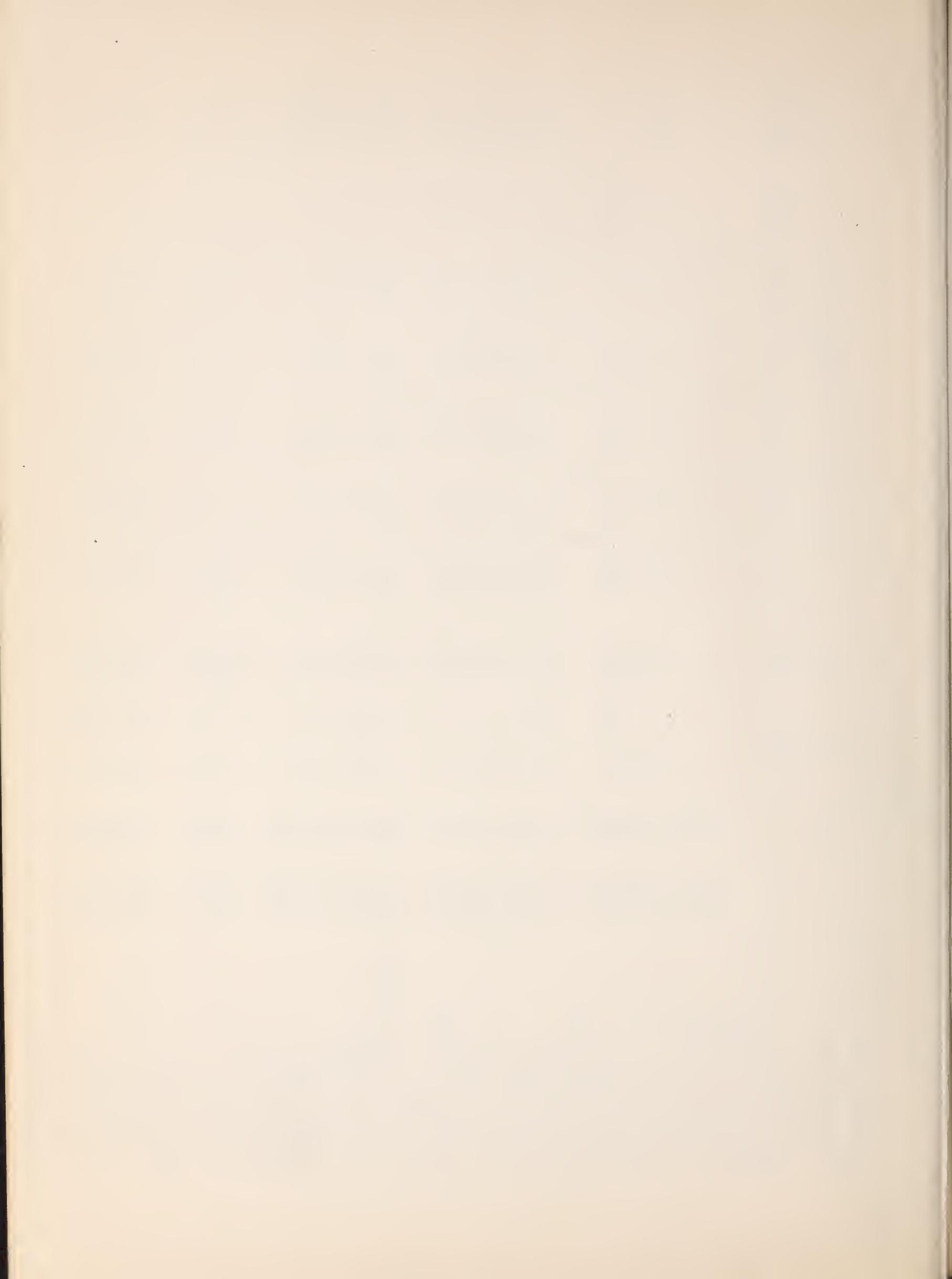
Station	Elev- ation	1950				1951				Seasonal Accumulation			
		Precipitation		Jan. - Feb.		Dept. from Normal		Precipitation		Normal		Departure	
		Oct.	Nov.	Dec.	Jan.	Feb.	Normal	1950-51	Normal	1950-51	Normal	1950-51	Normal
BIG HORN RIVER BASIN													
Cody	4984	.08	1.29	.28	.77	0.09	-0.22	2.42	2.12	40.30			
Lovell	3825	.02	.32	.03	.09	T	-0.27	0.46	1.48	-1.02			
Worland	4061	T	.10	.40	T	0.10	-0.16	0.60	1.93	-1.33			
Sunshine	4 SW	.17	1.04	.29	.37	0.67	+0.06	2.54	3.96	-1.42			
Thermopolis	4336	.19	.80	.21	.07	0.18	-0.22	1.34	2.94	-1.60			
Riverton	4954	.22	.57	.00	.05	0.31	+0.06	0.89	2.26	-1.37			
Dubois	6917	.37	.71	T	.16	0.45	+0.01	1.37	2.14	-1.07			
Average (7)		.15	.68	.17	.22	0.25	-0.11	1.37	2.19	-1.13			
TONGUE RIVER BASIN													
Sheridan	4021	.51	1.05	.58	.55	0.24	-0.46	2.93	3.89	-0.96			
POWDER RIVER BASIN													
Arvada	3680	.22	.31	.06	.16	0.18	-0.18	0.93	2.79	-1.86			
Metz Ranch	5280	.37	.67	.19	.46	0.38	-0.06	2.07	2.64	-0.57			
Gillette	4542	.63	.72	.05	.50	0.25	-0.19	2.15	3.43	-1.28			
Nine Mile Creek	5000	.70	.40	.05	.20	0.50	+0.20	1.85	2.33	-0.48			
Mid West	4850	.83	.47	.28	.23	0.27	-0.23	2.08	3.33	-1.25			
Average (5)		.55	.51	.31	.34	0.32	-0.09	1.82	2.91	-1.09			



MISSOURI BASIN

DRAINAGE BASIN AND SNOW COURSE	No.	Elev.	Date of Survey	Snow Depth (In.)	Water Content (Inches)	Ground Surface Condition				
						Mar. 1 1951	1950	Past Records	March 1 1949	Avg.
JEFFERSON RIVER (Rock-Beaverhead)										
Lakeview Ridge	11E3	7400								
Lakeview Canyon	11E4	6930	Feb.	8	2.5	0.8	1.0	2.6	1.5	53
Limekiln	11E2	6950	Feb.	8	15.0	3.0	5.0	6.0	4.7	64
White Pine Ridge	11E1	8850	Feb.	1	36.0	7.4	7.9	9.7	8.9	84
*Kilgore	11E12	6200	Mar.	1	29.0	6.0	11.9	10.5	8.1	74
*Camp Creek	12E3	6800	Feb.	28						
*Blue Ridge Mine (Horse Prairie)	11E11	6700								
Bloody Dick	13D10	7600	Feb.	13	46.8	13.2	8.5	13.9	9.8	135
Gold Stone	13D9	8100	Feb.	13	60.6	17.8	10.4	15.6	12.5	143
Lemhi Pass	13E1	7400	Feb.	10	35.2	9.4	5.4	7.9	7.5	125
Terrell Creek	13D12	6650	Feb.	9	24.4	6.6	3.0	4.8	3.4	194
Trail Creek	13E2	7090	Feb.	10	32.8	8.4	4.3	7.0	6.3	133
Selway Junction (Big Hole)	13D11	6500	Feb.	9	38.8	9.8	5.4	8.8	6.1	160
Big Hole Pass	13D3	7440	Feb.	14	59.8	19.0	12.2	20.9	14.9	128
Big Hole Pass (Below)	13D4	6900	Feb.	14	49.0	18.0	11.5	17.9	12.4	145
East Boundary	13D5	6700	Feb.	14	29.8	8.1	7.6	9.8	7.5	108
Jahnke Creek	13D8	7340	Feb.	13	41.9	12.4	7.7	13.6	9.2	135
Miner Forks	13D6	7300	Feb.	11	45.3	15.4	8.2	14.0	9.5	141
Miner Lake	13D7	6720	Feb.	11	31.7	8.1	5.8	9.4	7.3	111
*Moose Creek (Wise River)	13D16	6200								
Anderson Meadow	13D14	7000	Feb.	16	31.6	8.4	6.8	8.4	7.2	117
Elk Horn	13D15	8450	Mar.	2	39.1	10.4	7.1	12.2	7.5	139
Wise River	13D13	6300	Feb.	16	19.0	5.4	4.2	5.7	4.8	112
(Ruby River)										
Cottonwood	11E2	5900	Feb.	24	26.6	6.0	8.6	8.2	7.6	79
Cottonwood (Upper)	11E1	8400	Feb.	24	26.9	5.9	8.9	9.2	8.0	74
Flashlight	12D3	6950	Mar.	2	17.6	4.2	3.2	5.0	3.6	117
Tobacco Root	12D2	6900	Feb.	23	30.3	8.1	5.0	11.0	8.1	100
Vigilante	11D1	6125	Feb.	24					2.1	-

*Adjacent Basin



MONTANA SNOW SURVEYS MARCH 1, 1951

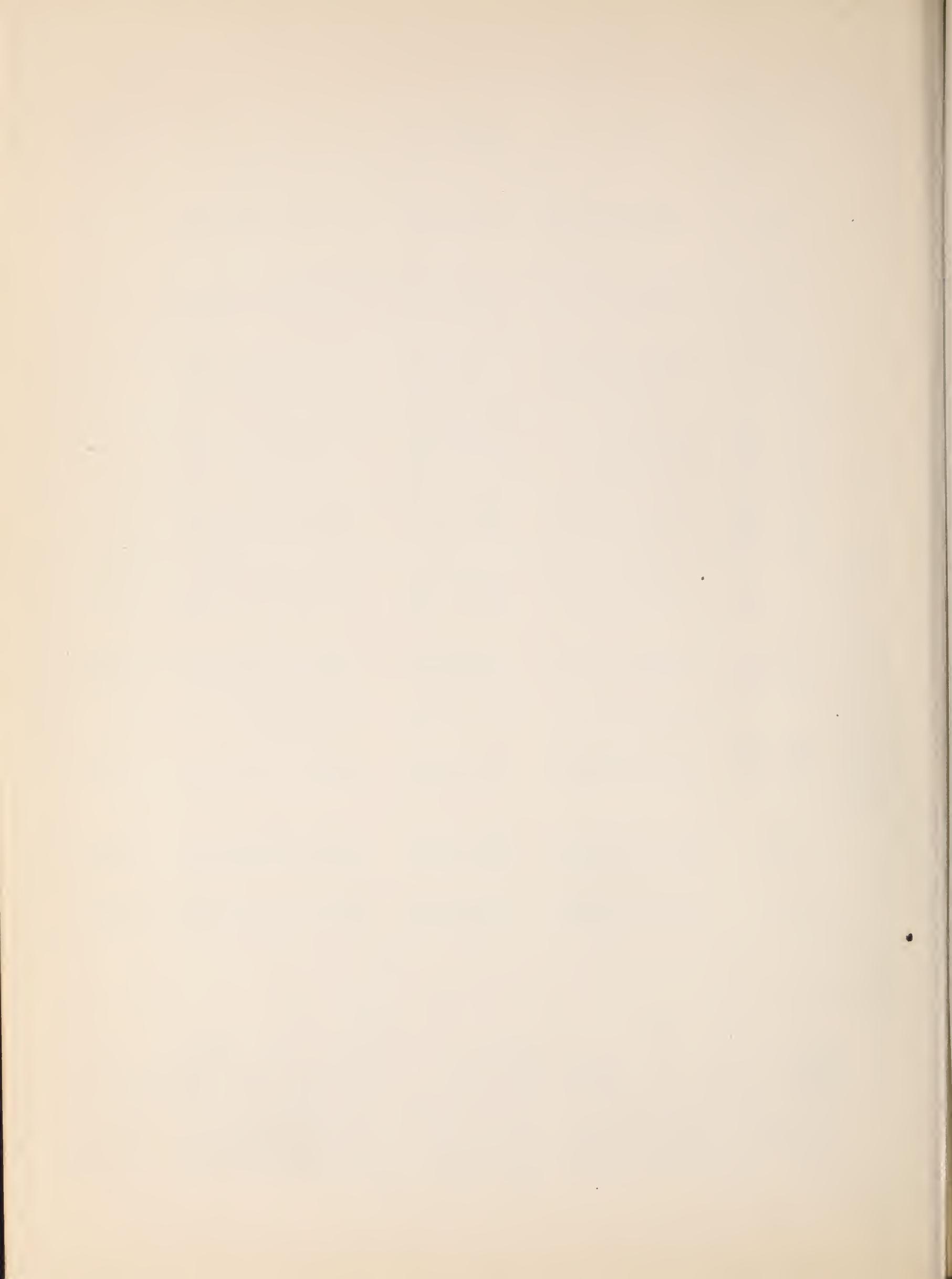
MISSOURI BASIN

DRAINAGE BASIN AND SNOW COURSE	No.	Elev.	Date of Survey 1951	Snow Depth (In.)	Water Content (Inches)	Average Data March 1 1950	Years of Record	Ground Surface Condition
			1951	1951	1951	1950	1951	
MADISON RIVER								
Hebgen	11E5	6550	Feb. 28	36.7	9.1	14.0	10.7	85
West Yellowstone	11E7	6700	Feb. 28	43.0	11.8	14.4	9.9	108
21-Mile	11E6	7150	Feb. 28	49.0	14.2	17.1	20.5	104
*Big Springs	11E9	6500	Feb. 26	68.0	18.8	20.4	26.4	107
*Island Park	11E10	3600	Feb. 27	57.0	12.9	17.3	21.8	14.0
*Valley View	11E8	6500	Feb. 27	45.0	10.3	15.3	17.3	92
Norris Basin	10E2	7500	Feb. 27	35.8	9.3	8.7	-	83
							8.1	115
GALLATIN RIVER								
Devil's Slide	10D4	8100	Mar. 2	49.2	14.8	12.9	18.1	15.0
Hood Meadow	10D3	6600	Mar. 4	24.9	6.6	4.3	8.4	6.1
Mystic Lake	10D2	6600	Mar. 4	21.3	5.6	3.8	9.8	6.2
New World	10D1	6700	Mar. 4	27.0	7.2	5.3	11.2	8.7
21-Mile	11E6	7150	Feb. 28	49.0	14.2	17.1	20.5	13.6

MISSOURI RIVER MAIN STEM

Chessman Reservoir	12C5	6200	Mar. 1	12.7	3.1	3.4	7.1	14.4
Crystal Lake	9C1	6100	Mar. 2	30.8	7.5	5.3	15.1	10.3
Grasshopper	10C2	7000	Feb. 28	13.4	3.0	3.8	7.3	4.2
Kings Hill	10C1	7950	Feb. 28	39.7	9.9	12.0	15.1	10.3
Pipestone Pass	12D1	7200	Feb. 28	27.7	5.3	1.8	6.8	4.0
Stemple Pass	12C1	6900	Feb. 28	35.9	9.1	8.2	12.1	8.0
Tennile, Lower	12C2	6250	Mar. 2	26.0	6.6	5.4	8.1	5.6
Tennile, Middle	12C3	6800	Mar. 2	39.6	9.7	8.4	11.2	8.1
Tennile, Upper	12C4	8000	Mar. 3	45.0	12.9	10.6	13.2	10.4
(Teton River)								
Fright Creek	12A1	6000	Feb. 28	58.2	18.6	18.2	15.3	122
Waldron Creek	12B2	5600	Feb. 27	28.6	8.7	6.8	7.0	124
West Fork	12B1	6000	Feb. 27	57.4	19.6	16.8	14.4	136

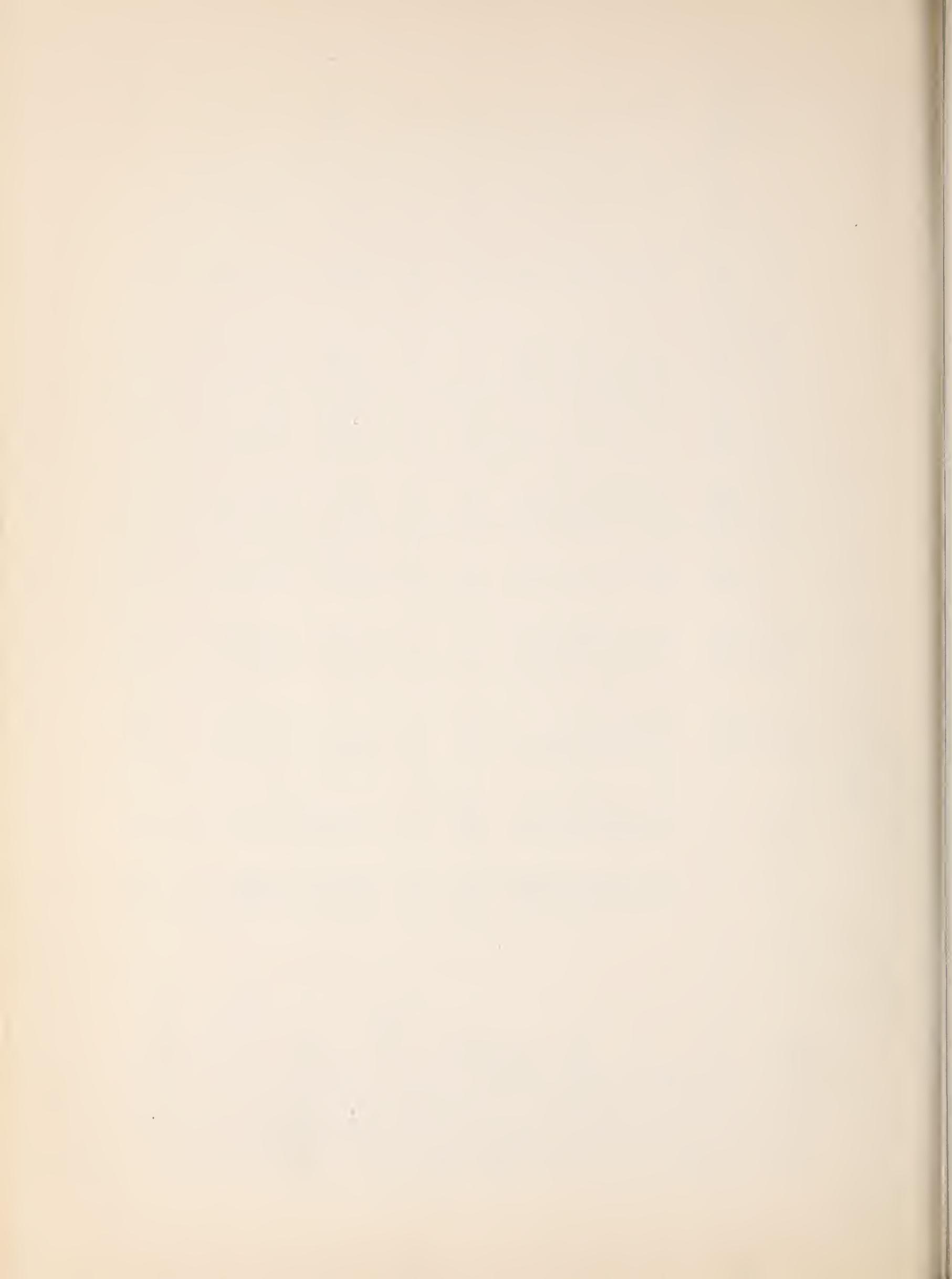
* Adjacent Basin



MONTANA SNOW SURVEYS MARCH 1, 1951

WITTSCHIBI BASTN

DRAINAGE BASIN AND SNOW COURSE	No.	Elev.	Date of Survey 1951	Snow Depth (In.)	Water Content (Inches)	Average Data			Years of Record	Ground Surface Condition
						Mar. 1 1951	1950	March 1 1949		
(Sun River)										
Benchmark	12B8	5500	Feb. 26	34.6	10.0	10.5	9.0	8.8	14	G.N.F.
Cabin Creek	12B6	5400	Feb. 27	28.7	7.8	7.2	6.2	7.1	3	---
5-Bull	12B9	5600	Feb. 26	28.6	7.7	7.8	6.9	7.5	4	G.N.F.
Gates Park	12B5	5300	Feb. 28	38.1	11.5	10.8	9.8	10.7	3	---
Goat Mountain	12B7	7000	Feb. 28	39.4	11.9	13.2	11.2	8.3	18	---
My Lake	13B9	7300	Mar. 6	104.5	39.1	46.5	46.5	46.5	2	GF
Wrong Ridge	12B3	6800	Mar. 2	65.9	21.0	26.0	20.9	22.6	3	---
Wrong Creek (Mariass River)	12B4	5700	Mar. 1	48.2	16.4	17.6	14.4	16.1	3	---
Marias Pass	12B5	5250	Feb. 28	58.1	20.2	24.3	20.5	20.5	18	---
Snow Lab. #16 (Milk River)	13A9	5200	Mar. 1	11.8	2.9	3.5	4.4	4.8	11	---
Rocky Boy	9A1	5200	Mar. 1	11.8	2.9	3.5	4.4	4.8	11	---
UPPER YELLOWSTONE										
Canyon	10E3	7750	Feb. 28	52.3	14.0	14.1	13.4	13.0	6	---
Cooke City	10D7	7400	Mar. 1	29.6	7.7	5.8	9.3	6.5	15	---
Crevice Mt.	1CD5	8400	Mar. 1	30.0	7.1	7.5	11.4	8.2	15	G.F.
Independence	10D6	8000							15	---
Lake Camp	1CE4	7850	Mar. 1	35.0	8.8	10.1	12.5	8.1	108	---
Lupine	10E1	7300	Feb. 27	31.2	7.1	9.2	13.3	8.2	87	---
*Lewis Lake Divide (Shields River)	10E9	7000	Feb. 28	116.0	42.2	45.4	47.3	37.9	133	---
*Tom Thumb Summit (Shields River)	10E7	7900	Feb. 28	63.0	21.0	24.5	23.3	22.1	95	---
Porcupine (Musselshell River)	10C3	9200	Mar. 3	16.2	3.5	3.4	8.0	4.4	79	G.F.
Grasshopper	10C2	7000	Feb. 28	13.4	3.0				71	4.2



MONTANA SNOW SURVEYS, MARCH 1, 1951

MISSOURI BASIN

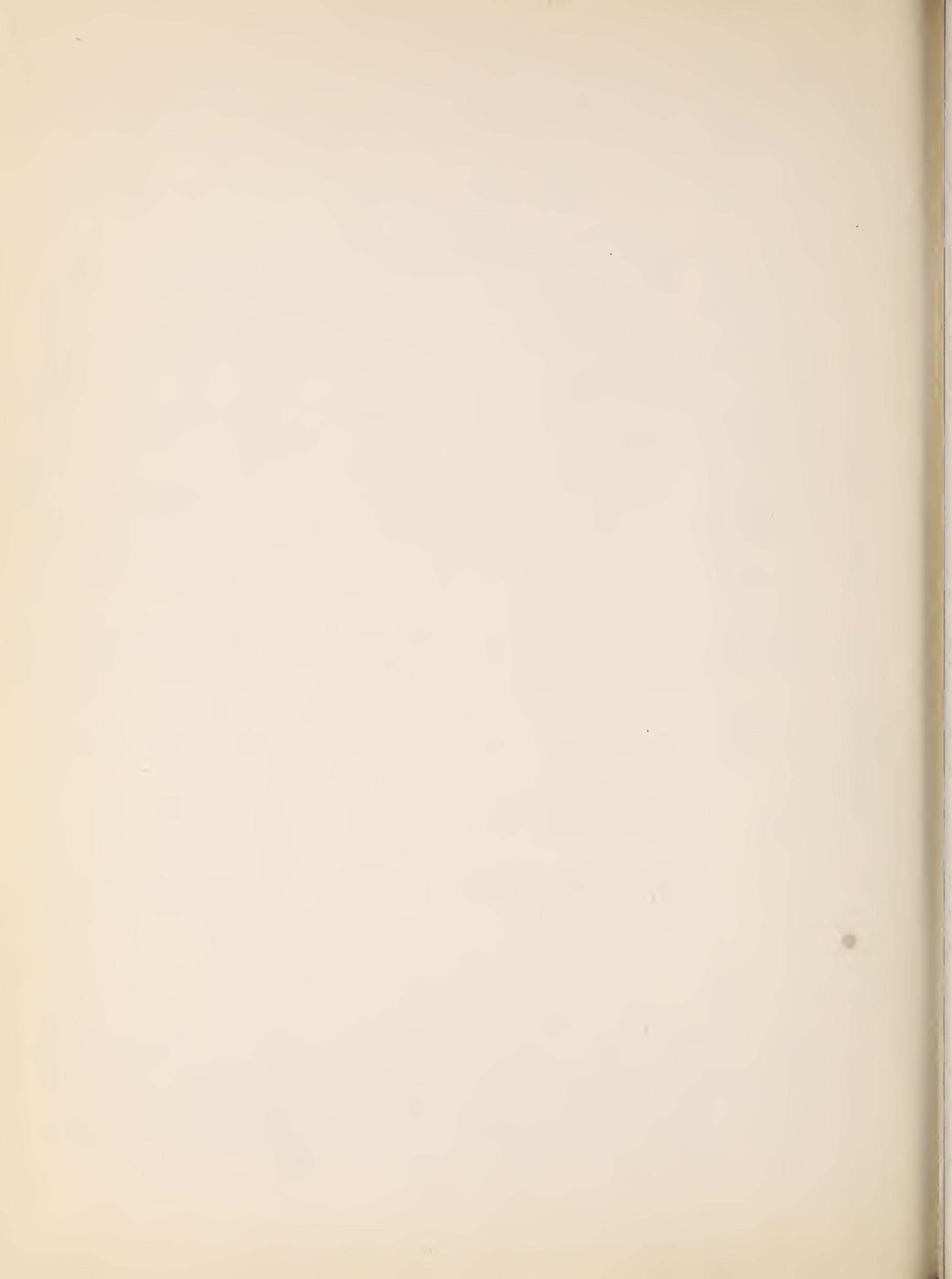
DRAINAGE BASIN AND SNOW COURSE	No.	Elev.	Date of Survey	Snow Depth (In.)	Water Content (Inches)			Years of Record	Ground Surface Condition
					Mar. 1 1951	1950	1949	Avg.	%Avg.
LOWER YELLOWSTONE (Wind River)									
Brooks Lake #3	10F2	9200	Feb. 28	79.3	28.2	26.6	18.1	157	G.F.
Burroughs Creek	9F6	8800	Feb. 27	69.5	23.0	16.0	17.5	130	G.F.
Dinwoodie	9F10	10000	Mar. 2	51.2	17.5	14.6	14.3	122	G.F.
Dry Creek	9F9	9500	Mar. 2	30.4	8.6	9.0	5.9	110	G.F.
Du Noir	9F2	8750	Feb. 27	37.3	10.3	11.2	9.3	111	G.F.
Geyser Creek	9F3	8500	Mar. 1	36.6	11.3	10.1	8.4	114	G.F.
Hobbs Park	9G2	10000	Feb. 23	53.0	16.4	23.7	19.5	19.9	G.F.
Little Warm	9FL4	9500	Mar. 1	62.1	21.3	18.7	13.7	82	G.F.
Mosquite Park	9G3	9500	Feb. 23	27.7	6.8	11.3	10.3	120	G.F.
Sheridan Creek R.S.	9F1	7500	Feb. 28	35.7	10.6	7.4	8.2	83	G.F.
St. Lawrence R.S.	9F11	9000	Feb. 24	19.9	4.4	8.2	9.0	193	G.F.
T-Cross Ranch	9F5	8000	Feb. 27	35.7	10.0	6.7	7.1	66	G.F.
Trout Creek	9G1	8400	Feb. 23	14.4	2.9	4.5	9.1	172	G.F.
*Togwotee Pass	9F1	9600	Feb. 27	92.0	32.4	-	-	11	G.F.
*Kendall	9F12	7900	Mar. 1	46.8	14.8	-	10.5	53	-
*Loomis Park	10F5	8500	Mar. 1	63.1	22.0	-	14.6	3	-
*Black Rock	1CF3	8600	Feb. 27	72.0	25.8	-	17.6	2	-
POPO AGIE RIVER									
Blue Ridge	8G2	9500	Feb. 22	38.6	10.1	14.8	15.7	123	G.F.
Grannier Meadows	8GL4	9000	Feb. 22	47.2	13.5	17.5	16.8	123	G.F.
Larsen Creek	9GL4	9000	Feb. 25	49.7	15.7	17.3	13.1	102	G.F.
Sawmill Glade	8G1	8500	Feb. 22	13.7	2.8	4.6	8.0	58	G.F.
South Pass	8G3	9000	Feb. 22	44.9	13.5	17.3	15.8	127	G.F.
Mulligan Park	9G5	8900	Mar. 1	48.5	15.7	11.7	10.6	157	-
BIG HORN RIVER (Wyoming)									
Beavers Mill	9F8	8000	Mar. 1	32.1	8.1	7.7	6.9	107	GF
Owl Creek	8F1	8700	Mar. 6	25.7	5.5	5.8	6.0	95	GF
Timber Creek	9E2	9000	Feb. 26	16.9	5.8	4.1	5.8	100	-

*Adjacent Basin



MONTANA SNOW SURVEYS, MARCH 1, 1951

MISSOURI BASIN DRAINAGE BASIN AND SNOW COURSE	Water Content (Inches)						Years of Record	Ground Surface Condition		
	No.	Elev.	Date of Survey 1951	Snow Depth (In.)	Past Records					
					Mar. 1 1951	March 1 1950				
SHOSHONE RIVER East Entrance Sylvan Pass	10E6	7000	Feb. 28	41.4	5.8	9.6	14.4	9.9		
	10E5	7100	Mar. 2	48.8	15.0	14.5	15.7	11.5		
TONGUE RIVER Burgess R.S. Big Goose Dome Lake	7E4	7900	Mar. 4	35.8	11.2	-	-	-		
	7E2	7700	Mar. 4	11.8	2.2	-	-	-		
	7E5	8800	Mar. 4	21.8	4.4	-	-	-		
POWDER RIVER Muddy Pass Soldier Park	7E7	9700	Feb. 28	29.2	6.2	-	-	-		
	7E6	8700	Mar. 4	23.8	4.1	-	-	-		
CHEYENNE RIVER (South Dakota)	1 S.D.	6500	Mar. 1	9.6	2.0	2.8	9.4	5.5		
	2 S.D.	6800	Mar. 1	14.8	3.6	4.2	9.7	5.4		
	3 S.D.	6000	Mar. 1	7.6	1.4	3.9	14.7	3.5		
<u>COLUMBIA RIVER DRAINAGE IN MONTANA</u>										
KOOTENAI	14A4	5000	Feb. 27	40.0	11.0	14.0	17.0	8.0		
	Canada	3500	Feb. 27	27.8	10.3	10.2	9.3	139		
	Canada	4100	Feb. 28	50.9	14.3	-	-	-		
	Canada	5100	Feb. 26	60.1	18.6	16.1	17.8	106		
	Canada	3800	Mar. 1	35.1	10.4	9.2	7.2	192		
	Canada	5000	Feb. 27	69.6	22.6	14.9	12.0	5.4		
	Canada	3050	Feb. 27	41.9	16.9	13.3	20.2	152		
	15A1	6000	Mar. 1	63.0	19.9	20.2	18.7	15.4		
	Canada	4500	Feb. 27	36.7	9.3	6.0	5.7	172		
	Canada	5100	Feb. 28	54.1	15.9	15.6	12.7	123		
	Canada	4400	Feb. 28	39.4	10.3	9.6	8.0	9.1		

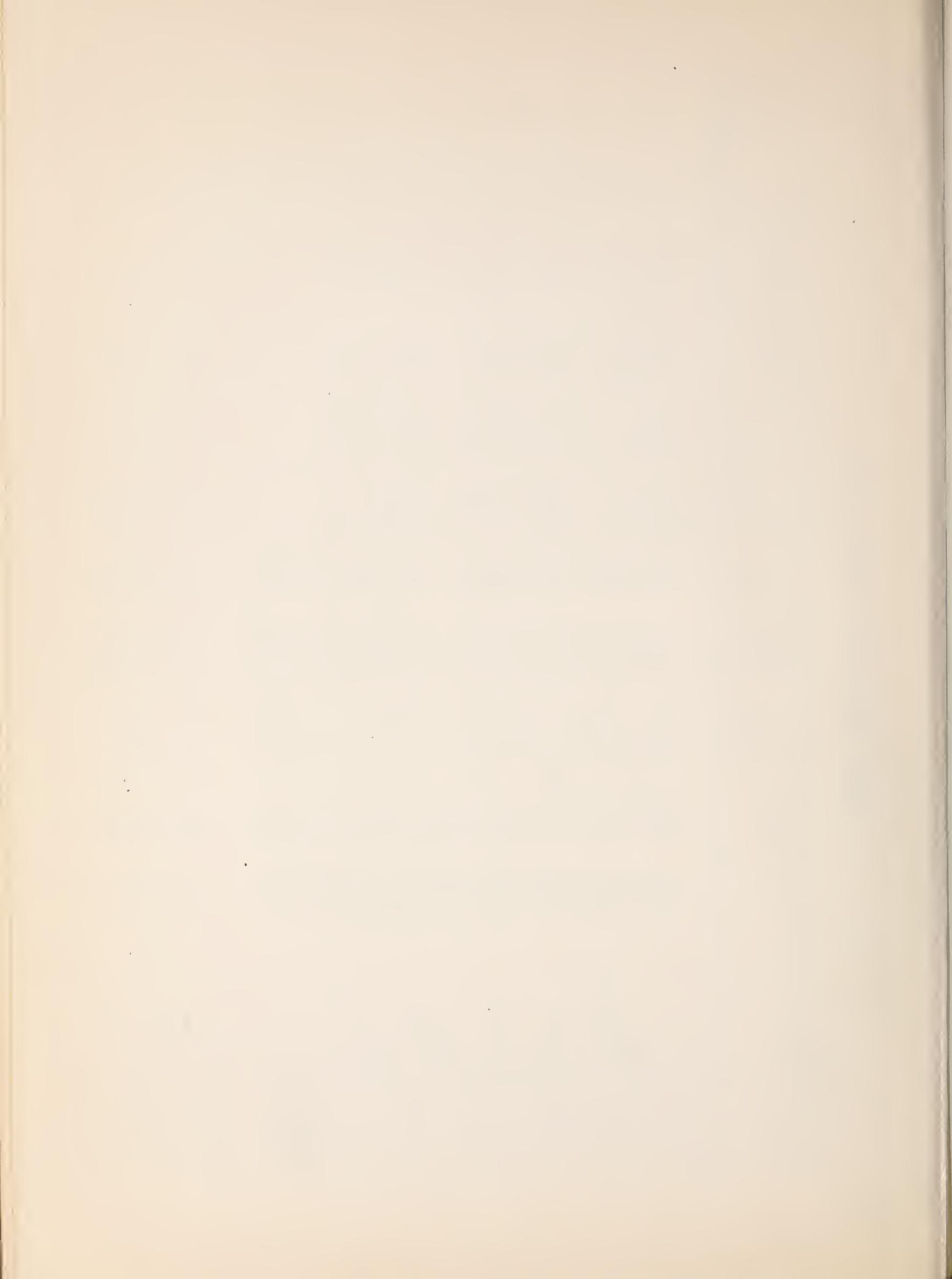


MONTANA SNOW SURVEYS, MARCH 1, 1951

MISSOURI BASIN

DRAINAGE BASIN
AND
SNOW COURSE

No.	Elev.	Survey 1951	Date of Survey 1951	Snow Depth (In.)	Water Content (Inches)	Average Data March 1			Years of Record	Ground Surface Condition
						Past Records	1950	1949		
FLATHEAD RIVER										
13B3	6750	Feb. 28	108.4	37.6	38.7	35.0	34.6	106	11	--
14A4	5000	Feb. 27	40.0	11.0	14.0	17.0	13.8	80	5	--
13A1	14700	Mar. 2	90.5	31.2	35.1	31.1	28.1	111	7	--
13A2	5600	Feb. 28	50.9	15.4	16.8	12.1	12.1	127	8	--
14A3	5700	Feb. 28	81.4	26.7	--	--	--	2	2	--
14A2	14300	Feb. 25	29.9	8.3	8.8	7.9	8.2	101	6	--
13B8	7600	Mar. 1	112.4	40.8	48.8	40.5	41.4	99	4	--
14A5	14300	Feb. 26	31.9	7.8	9.1	10.4	9.1	79	5	--
13A5	5250	Feb. 28	58.1	20.2	24.3	20.5	14.4	140	18	--
13B7	6330	Mar. 4	110.4	40.0	45.0	37.4	35.4	113	11	--
13B6	14300	Feb. 26	15.0	4.3	13.6	14.3	11.8	127	5	--
13A9	5200	Mar. 1	40.1	12.5	17.5	19.3	19.1	66	4	--
13B2	7000	Mar. 1	105.6	35.9	40.5	39.4	38.6	93	3	--
13B10	6500	Feb. 28	97.2	31.6	43.3	37.4	37.7	84	4	--
13B1	6500	Feb. 28	46.3	14.7	--	--	--	5	1	--
13B11	3600	Mar. 1	83.4	30.5	36.8	32.2	32.3	95	4	--
13B5	7000	Mar. 1	28.9	9.5	--	--	--	7	1	--
13B14	5000	Mar. 2	29.3	9.0	--	--	--	7	1	--
13B13	4530	Mar. 2	41.0	12.9	--	--	--	7	1	--
13A13	3800	Feb. 28	30.8	10.7	--	--	--	7	1	--
13B11	3580	Feb. 27	--	--	--	--	--	7	1	--
UPPER CLARK FORK										
12C5	6200	Mar. 1	12.7	3.1	3.4	7.1	4.4	70	16	--
13C9	7800	Mar. 2	58.2	18.0	16.4	--	--	--	2	--
13C8	7200	Mar. 2	51.1	15.8	14.3	--	--	--	2	--
13C4	6450	Feb. 28	32.1	8.1	5.9	10.6	5.7	142	16	G.F.
13B7	6330	Mar. 4	110.4	40.0	45.0	37.4	35.4	113	11	--
12D1	7200	Feb. 28	27.7	5.3	1.8	6.8	4.0	132	14	--



MONTANA SNOW SURVEYS, MARCH 1951

MISSOURI BASIN

DRAINAGE BASIN AND SNOW COURSE	No.	Elev.	Date of Survey 1951	Snow Depth (In.) 1951	Water Content (Inches) Past Records 1950 1951	Average Data March 1 Avg.	Years of Record	Ground Surface Condition
UPPER CLARK FORK (Continued)								
Rainy Lake	13B6	4200	Feb. 26	15.0	4.3	11.8	127	--
Temple Pass	13C1	6900	Feb. 28	35.9	9.1	8.0	111	--
Stuart Mill	13C6	6500	Feb. 28	24.0	6.2	4.8	129	G.F.
Picnic Grounds	12C6	6500	Feb. 28	21.9	5.0	3.8	132	G.F.
Southern Cross	13C5	6500	Feb. 28	20.8	5.5	4.2	131	G.F.
Tennile, Lower	12C2	6250	Mar. 2	26.0	6.6	5.6	118	--
Tennile, Middle	12C3	6800	Mar. 2	39.6	9.7	8.1	120	--
Tennile, Upper	12C4	8000	Mar. 3	45.0	12.9	11.2	124	--
*Lookout	15B2	5250	Feb. 28	90.0	32.2	36.4	110	--
BITTERROOT								
Gibbons Pass	13D2	7100	Feb. 28	73.7	23.8	26.2	130	--
Mud Creek Pasture	14C1	4500	Mar. 1	19.7	6.5	15.4	77	--
Nezperce Camp	14D2	5580	Feb. 27	46.0	12.8	17.6	115	--
Nezperce Pass	14D1	6575	Feb. 27	51.8	16.8	20.4	112	--

CORRECTION TO FEBRUARY BULLETIN

WYOMING
TONGUE RIVER
Big Goose R.S.

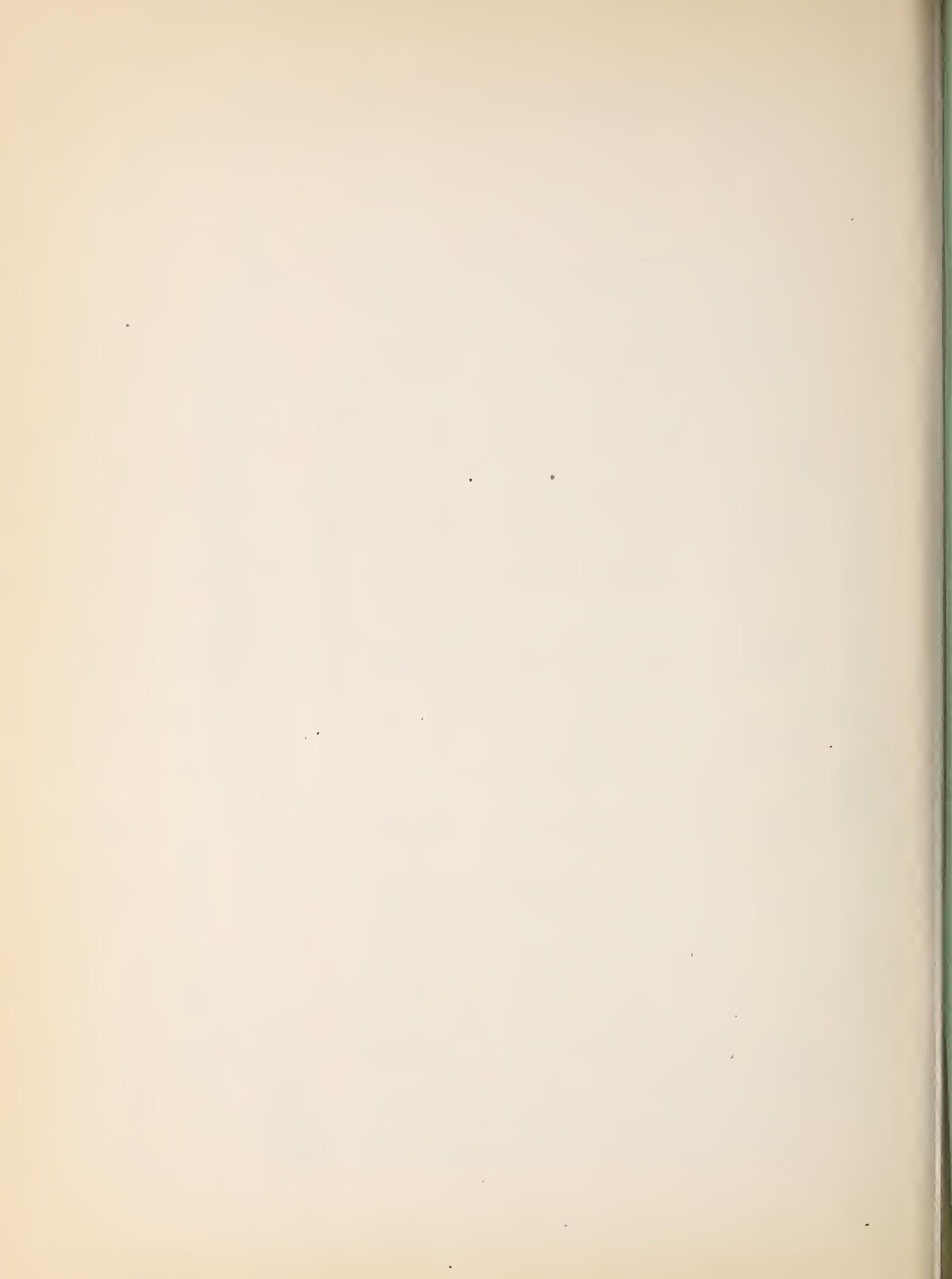
FEBRUARY DATA RECEIVED AFTER BULLETIN WAS DISTRIBUTED

POWDER RIVER WYOMING
North Powder River new course

FEBRUARY 14 24.6 5.0 --- --- --- --- ---

1

UPPER CLARK FORK	MONTANA	Intergaard	13C4	6450	Jan. 31	24.2	6.2
Picnic Grounds	12C6	6500	12C6	6500	Jan. 31	18.1	14.7
Southern Cross	13C5	6500	13C5	6500	Jan. 31	16.5	14.6
Stuart Mill	13C6	6500	13C6	6500	Jan. 31	18.0	5.2





Federal - State - Private

COOPERATIVE SNOW SURVEYS

Furnishes the basic data necessary for forecasting water supply for irrigation, domestic and municipal water supply, hydro-electric power generation, navigation, mining and industry

"WATER IS THE WEST'S GREATEST RESOURCE"